

AMENDMENTS TO THE CLAIMS

1. (Withdrawn) Liquid crystal display with wide viewing angle comprising nematic liquid crystal with negative dielectric anisotropy placed between flat parallel substrates supplied with conductive electrodes and homeotropic aligning layer, orientation of the said liquid crystal is made non-uniform within the pixel area by means of the parallel to the said substrates components of the electric field applied to the said electrodes, while the components themselves have various directions

characterized in that in the space occupied by the said liquid crystal dielectric particles are displaced with dielectric constant essentially different from dielectric permittivity of the said liquid crystal.

2. (Withdrawn) Display according to claim 1, characterized in that the said dielectric particles are made by depositing relieved dielectric films over the aforementioned electrodes.

3. (Canceled)

4. (Withdrawn) Display according to claim 1, characterized in that the said liquid crystal contains chiral dopant with such concentration that equilibrium pitch of the said liquid crystal equals four times the liquid crystal thickness and the product of the later by the liquid crystal birefringence is made equal to the integer number of the light wavelengths.

5. (Withdrawn) Display according to claim 1, characterized in that one of the said electrodes is made reflective.

6. (Original) Liquid crystal display with wide viewing angle comprising nematic liquid crystal with negative dielectric anisotropy placed between flat parallel substrates supplied with conductive electrodes and homeotropic aligning layers, orientation of the said liquid crystal is made non-uniform within the pixel area by means of the parallel to the said substrates components of the electric field applied to the said electrodes, while the components themselves have various directions

characterized in that

odd and even sections of the at least one of the said electrodes been made sectional are connected to the electric field sources of the opposite polarity.

7. (Canceled)

8. (Original) Display according to claim 6, characterized in that the said liquid crystal contains chiral dopant with such concentration that equilibrium pitch of the said liquid crystal equals four times the liquid crystal thickness and the product of the later by the liquid crystal birefringence is made equal to the integer number of the light wavelengths.

9. (Original) Display according to claim 6, characterized in that one of the said electrodes is made reflective.

10. (Withdrawn) Method for making liquid crystal display with wide viewing angle comprising the deposition on conductive electrodes and homeotropic aligning layers of the faced to each other surfaces of the flat parallel substrates and filling the space between them with nematic liquid crystal possessing negative dielectric anisotropy, making the orientation of the said liquid crystal in the space between the said electrodes non-uniform when applying the

electric fields to the said electrodes with the components of the electric field parallel to the said substrates with various directions characterized in that

the said parallel to the substrates plane component of the electric field is created by displacing in the space occupied by the said liquid crystal dielectric particles with dielectric constant essentially different from dielectric permittivity of the liquid crystal.

11. (Withdrawn) Method according to claim 10, characterized in that the said dielectric particles are made by depositing relieved dielectric films over the aforementioned electrodes.

12. (Withdrawn) Method according to claim 10, characterized in that the doubled product of the liquid crystal thickness by its birefringence is chosen to be equal to the odd number of the light wavelengths.

13. (Withdrawn) Method according to claim 10, characterized in that chiral dopant is added to the said liquid crystal with such concentration that equilibrium pitch of the said liquid crystal equals four times the liquid crystal thickness and the product of the later by the liquid crystal birefringence is made equal to the integer number of the light wavelengths.

14. (Withdrawn) Method for making liquid crystal display with wide viewing angle comprising the deposition of conductive electrodes and homeotropic aligning layers on the faced to each other surfaces of the flat parallel substrates and filling the space between them with nematic liquid crystal possessing negative dielectric anisotropy, making the orientation of the said liquid crystal in the space between the said electrodes non-uniform when applying the electric field to the said electrodes with the components of the electric field parallel to the said substrates with various directions characterized in that

the said parallel to the substrates plane component of the electric field is created by connecting odd and even sections of the said electrodes been made sectional to the electric field sources of the opposite polarity.

15. (Canceled)

16. (Withdrawn) Method according to claim 14, characterized in that chiral dopant is added to the said liquid crystal with such concentration that equilibrium pitch of the said liquid crystal equals four times the liquid crystal thickness and the product of the later by the liquid crystal birefringence is made equal to the integer number of the light wavelengths.

17. (Withdrawn) A liquid crystal display device comprising:

first and second substrates;

a liquid crystal layer having a first dielectric constant between the first and second substrates; and

a material having a second dielectric constant over the first substrate, the material extending into the liquid crystal layer.

18. (Withdrawn) A liquid crystal display device according to claim 17, further comprising a transparent conductive layer between the first substrate and the material.

19. (Withdrawn) A liquid crystal display device according to claim 17, further comprising an alignment layer over the first substrate and the material.

20. (Withdrawn) A liquid crystal display device according to claim 19, wherein the alignment layer includes a homeotropic alignment layer.

21. (Withdrawn) A liquid crystal display device according to claim 17, wherein the first and second dielectric constants are different.

22. (Withdrawn) A liquid crystal display device according to claim 17, wherein the liquid crystal layer includes a negative dielectric anisotropy liquid crystal.

23. (Withdrawn) A liquid crystal display device according to claim 17, wherein the liquid crystal display device is a multi-domain liquid crystal display device.

24. (Currently Amended) A liquid crystal display device comprising:
first and second substrates, each of the first and second substrates having a transparent conductive layer; and
a liquid crystal layer between the first and second substrates,
wherein said liquid crystal display is an electrically controlled birefringence type and at least one transparent conductive layer has a first conductive portion and a second conductive portion, the second conductive portion being spaced from the first conductive portion, the first portion and the second portion each corresponding to first and second electric fields, the first and second electric fields having opposite polarities.

Claims 25-26 (Canceled)

27. (Previously Presented) A liquid crystal display device according to claim 24, further comprising an alignment layer over the transparent conductive layer.

28. (Previously Presented) A liquid crystal display device according to claim 27, wherein the alignment layer includes a homeotropic alignment layer.

29. (Previously Presented) A liquid crystal display device according to claim 24, wherein the liquid crystal layer includes a negative dielectric anisotropy liquid crystal.

30. (Previously Presented) A liquid crystal display device according to claim 24, wherein the liquid crystal display device is a multi-domain liquid crystal display device.

31. (Withdrawn) A liquid crystal display device comprising:
first and second substrates;
a liquid crystal layer having a first dielectric constant between the first and second substrates;
a transparent conductive layer over the first substrate, the transparent conductive layer has first and second end portions;
a material having a second dielectric constant over the transparent conductive layer, the material extending into the liquid crystal layer, the material separating the liquid crystal layer into first and second regions, the first and second regions corresponding to first and second electric fields, the material distorting the first and second electric fields.

32. (Withdrawn) A liquid crystal layer distorts the first and second electric fields.

33. (Withdrawn) A liquid crystal display device according to claim 31, further comprising an alignment layer over the first substrate and the material.

34. (Withdrawn) A liquid crystal display device according to claim 33, wherein the alignment layer crystal display device according to claim 31, wherein the end portions of the transparent conductive includes a homeotropic alignment layer.

35. (Withdrawn) A liquid crystal display device according to claim 31, wherein the first and second dielectric constants are different.

36. (Withdrawn) A liquid crystal display device according to claim 31, wherein the liquid crystal layer includes a negative dielectric anisotropy liquid crystal.

37. (Withdrawn) A liquid crystal display device according to claim 31, wherein the liquid crystal display device is a multi-domain liquid crystal display device.

38. (Currently Amended) A liquid crystal display device comprising:
first and second substrates, each of the first and second substrates having a transparent conductive layer; and
a liquid crystal layer between the first and second substrates,
wherein said liquid crystal display is an electrically controlled birefringence type and at least one transparent conductive layer has a first conductive portion and a second conductive portion, the second conductive portion being spaced from the first conductive portion, the first conductive portion and the second conductive portion each correspond to first and second electric fields and each of the first and second conductive portions of the transparent conductive layer has an end portion, the end portion distorting a corresponding electric field, the first and second electric fields have opposite polarities.

Claim 39 (Canceled)

40. (Previously Presented) A liquid crystal display device according to claim 38, further comprising an alignment layer over the transparent conductive layer.

41. (Previously Presented) A liquid crystal display device according to claim 40, wherein the alignment layer includes a homeotropic alignment layer.

42. (Previously Presented) A liquid crystal display device according to claim 38, wherein the liquid crystal layer includes a negative dielectric anisotropy liquid crystal.

43. (Previously Presented) A liquid crystal display device according to claim 38, wherein the liquid crystal display device is a multi-domain liquid crystal display device.

44. (Withdrawn) A method of making a liquid crystal display device having first and second substrates comprising:

forming a liquid crystal layer having a first dielectric constant between the first and second substrates; and

forming a material having a second dielectric constant over the first substrate, the material extending into the liquid crystal layer.

45. (Withdrawn) A method according to claim 44, further comprising a transparent conductive layer between the first substrate and the material.

46. (Withdrawn) A method according to claim 44, further comprising an alignment layer over the first substrate and the material.

47. (Withdrawn) A method according to claim 46, wherein the alignment layer includes a homeotropic alignment layer.

48. (Withdrawn) A method according to claim 44, wherein the first and second dielectric constants are different.

49. (Withdrawn) A method according to claim 44, wherein the liquid crystal layer includes a negative dielectric anisotropy liquid crystal.

50. (Withdrawn) A method according to claim 44, wherein the liquid crystal display device is a multi-domain liquid crystal display device.

51. (Withdrawn) A method of making a liquid crystal display device having first and second substrates comprising:

forming a liquid crystal layer between the first and second substrates; and

forming a transparent conductive layer over the first substrate, the transparent conductive layer having a first portion and a second portion, the second portion being spaced from the first portion.

52. (Withdrawn) A method according to claim 51, wherein the first portion and the second portion each correspond to first and second electric fields.

53. (Withdrawn) A method according to claim 52, wherein the first and second electric fields have opposite polarities.

54. (Withdrawn) A method according to claim 51, further comprising an alignment layer over the transparent conductive layer.

55. (Withdrawn) A method according to claim 54, wherein the alignment layer includes a homeotropic alignment layer.

56. (Withdrawn) A method according to claim 51, wherein the liquid crystal layer includes a negative dielectric anisotropy liquid crystal.

57. (Withdrawn) method according to claim 51, wherein the liquid crystal display device is a multi-domain liquid crystal display device.

58. (Withdrawn) A method of making a liquid crystal display device having first and second substrates comprising:

forming a liquid crystal layer having a first dielectric constant between the first and

second substrates;

forming a transparent conductive layer over the first substrate, the transparent conductive layer has first and second end portions;

forming a material having a second dielectric constant over the transparent conductive layer, the material extending into the liquid crystal layer, the material separating the liquid crystal layer into first and second regions, the first and second regions corresponding to first and second electric fields, the material distorting the first and second electric fields.

59. (Withdrawn) A method according to claim 58, wherein the end portions of the transparent conductive layer distorts the first and second electric fields.

60. (Withdrawn) A method according to claim 58, further comprising an alignment layer over the first substrate and the material.

61. (Withdrawn) A method according to claim 60, wherein the alignment layer includes a homeotropic alignment layer.

62. (Withdrawn) A method according to claim 58, wherein the first and second dielectric constants are different.

63. (Withdrawn) A method according to claim 58, wherein the liquid crystal layer includes a negative dielectric anisotropy liquid crystal.

64. (Withdrawn) A method according to claim 58, wherein the liquid crystal display device is a multi-domain liquid crystal display device.

65. (Withdrawn) A method of making a liquid crystal display device having first and second substrates comprising:

forming a liquid crystal layer between the first and second substrates; and

forming a transparent conductive layer over the first substrate, the transparent conductive layer having a first portion and a second portion, the second portion being spaced from the first portion, the first portion and the second portion each correspond to first and second electric fields, wherein

each of the first and the second portions of the transparent conductive layer has an end portion, the end portion distorting a corresponding electric field.

66. (Withdrawn) A method according to claim 65, wherein the first and second electric fields have opposite polarities.

67. (Withdrawn) A method according to claim 65, further comprising an alignment layer over the transparent conductive layer.

68. (Withdrawn) A method according to claim 67, wherein the alignment layer includes a homeotropic alignment layer.

69. (Withdrawn) A method according to claim 65, wherein the liquid crystal layer includes a negative dielectric anisotropy liquid crystal.

70. (Withdrawn) A method according to claim 65, wherein the liquid crystal display device is a multi-domain liquid crystal display device.